Claims

1. Method for manufacturing ceramic parts with a certain porosity by sintering using microwaves, the materials to be sintered being arranged in a vessel,

   characterized in that

   - the microwaves introduce sintering energy into the materials to be sintered via electromagnetic waves in the range of vacuum wavelengths between 5 cm – 20 cm in multimode having an electromagnetic power of up to one kilowatt, and

   - besides being built from primary materials for the structure of the vessel, the vessel is built from a secondary material which comprises, in particular, a mixture of or mixed crystals of non-metallic, para-, ferro- or antiferromagnetic materials.

2. Method of claim 1, characterized in that the wavelength range of the electromagnetic waves is from 11-13 cm.

3. Method of claim 1 or 2, characterized in that the ceramic parts have a porosity of 0-50 percent by volume.

4. Method of claim 3, characterized in that the porosity is between 10 – 30 % by volume, the porosity being controllable through the temperature pattern.

5. Method of at least one of claims 1 to 4, characterized in that the ceramic parts are infiltrated with a glass material to produce the final strength.

6. Method of at least one of claims 1 to 5, characterized in that the ceramic parts are sintered to a defined final density of at least 80%, preferably at least 90%, and most preferably 98% of the theoretical density of the respective material.

7. Method of at least one of claims 1 to 6, characterized in that the ceramic parts are dental restorations.

8. Method of at least one of claims 1 to 7, characterized in that dental ceramic frame parts are veneered using suitable glass materials such as feldspar glass, lithium disilicate glass or fluoroapatite glass.

9. Method of at least one of claims 1 to 8, characterized in that the materials used for producing dental ceramic restorations preferably consist of Al_2O_3, Spinell, Ce- or Y-stabilized ZrO_2 (e.g. TZP tetragonal zirconia polycrystal, PSZ partial stabilized zirconia) or mixtures of these materials.

10. Method of at least one of claims 1 to 9 for manufacturing full ceramic dental restorations form dental ceramic masses, such as fieldspar glass, lithium disilicate glass or fluorapatite glass, said method of at least one of claims 1 to 10 being used for glazing full ceramic dental parts or, e.g., for pressed dental ceramic parts as a pressing oven or a preheating oven.

11. Vessel for carrying out the method of one of claims 1 to 10, comprising a primary and a secondary material, characterized in that the secondary material comprises a non-metallic para-, ferro- or antiferromagnetic material.

12. Vessel of claim 10, characterized in that the secondary material is a mixture of para-, ferro- or antiferromagnetic materials such as, e.g.,

zincochromite ($ZnCr_2O_4$) with 0-99 percent by weight of zincite (zinc oxide ZnO).

13. Vessel of claim 11 or 12, characterized in that, to increase the dense sintering temperature, the secondary material of the vessel includes a mixture of the material with a refractory non-metallic material having a high transparency for super high frequency waves in a wide temperature range.

14. Vessel of claim 13, characterized in that the refractory non-metallic secondary material having a high transparency for super high frequency waves is zinc oxide (ZnO).

15. Vessel of at least one of claims 11 to 14, characterized by a receiving portion (26) for receiving the material to be sintered, secondary material being provided at least partly around the receiving portion (26).

16. Vessel of claim 15, characterized in that the receiving portion (26) is surrounded by at least one, preferably a plurality of secondary material elements (32, 46).

17. Vessel of one of claims 11 to 16, characterized in that the secondary material is surrounded by primary material.

18. Vessel of one of claims 11 to 17, characterized in that the secondary material extends over the entire height of the receiving portion (26).

19. Vessel of one of claims 15 to 18, characterized in that the secondary material elements (46) are rod-shaped.

20. Vessel of one of claims 15 to 19, characterized in that the secondary material elements (46) are divided regularly around the receiving portion (26).

21. Vessel of one of claims 15 to 20, characterized in that the secondary material elements (46) are encapsulated in particular with primary material.